

CLAIMS

1. A record medium for recording a computer controllable program, the program being disposed between a controlling portion and hardware, the program controlling the hardware corresponding to a message received from the controlling portion, the program comprising:

a first process portion for communicating with the controlling portion;

a second process portion for being communicable with first hardware and second hardware;

a third process portion for communicating with the first process portion and the second process portion and executing an interfacing process corresponding to the first hardware; and

a fourth process portion for communicating with the first process portion and the second process portion and executing an interfacing process corresponding to the second hardware,

wherein the first process portion outputs a message to one of the third process portion and the fourth process portion corresponding to a message received from the controlling portion.

2. The record medium as set forth in claim 1, wherein the program further comprises:

a fifth process portion for communicating with the controlling portion, and

wherein the fifth process portion acquires data that is processed by the hardware corresponding to a message received from the controlling portion.

3. The record medium as set forth in claim 2,  
5 wherein the controlling portion includes a main application process portion.

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4. The record medium as set forth in claim 3,  
wherein the fifth process portion of the program receives a message that designates the stored location of data from the main application process portion,  
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wherein the fifth process portion acquires data that is processed by the hardware corresponding to the stored location of the data,

15 wherein the first process portion receives a message that designates an encoding process type from the main application process portion,

wherein one of the third process portion and the fourth process portion receives the message from the first process portion corresponding to the encoding process type, and  
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wherein the first or second hardware that communicates with the second process portion encodes the acquired data corresponding to a communication result of one of the third process portion and the fourth process portion to the second process portion.  
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5. The record medium as set forth in claim 4,

wherein the program further comprises:

5 a data input - output manager process portion  
for receiving a message that designates the stored  
location of data received from the main application  
process portion, the data input - output manager  
process portion acquiring data that is processed by the  
hardware corresponding to the stored location of the  
data;

10 an encoding process manager process portion  
for receiving the message that designates the encoding  
process type from the main application process portion;  
and

15 a first encode card input - output I/F  
process portion and a second encode card input - output  
I/F process portion, one of which receives the message  
from the encoding process manager process portion  
corresponding to the encoding process type,

20 wherein the first hardware or the second  
hardware that communicates with the encode card driver  
process portion encodes the acquired data corresponding  
to a communication result of one of the first encode  
card input - output I/F process and the second encode  
card input - output I/F process to the encode card  
driver process.

25 6. The record medium as set forth in claim 5,  
wherein the encode card driver process  
portion is communicable with a first encoder for

encoding audio data corresponding to ATRAC format and a second encoder for encoding audio data corresponding to MPEG Audio Layer 3 format.

7. The record medium as set forth in claim 1, wherein each process portion is assigned priority.

8. The record medium as set forth in claim 1, wherein if an abnormality takes place in each process portion, the state thereof changes in one of a first path, a second path, and a third path, the first path including a first state to which each process portion advances when it is generated, the second path including a second state to which each process portion advances when it is completed, a third state to which each process portion advances when it is generated, and the first state, the third path including the second state and a fourth state to which each process portion advances when it is completed.

9. A record medium for recording a computer controllable program, the program being disposed between a controlling portion and hardware, the program controlling the hardware corresponding to a message received from the controlling portion, the program comprising:

a first process portion for communicating with the controlling portion;  
a second process portion for being

communicable with a first software encoder and a second software encoder;

5 a third process portion for communicating with the first process portion and the second process portion and executing an interfacing process corresponding to the first software encoder; and

10 a fourth process portion for communicating with the first process portion and the second process portion and executing an interfacing process corresponding to the second software encoder,

15 wherein the first process portion outputs a message to one of the third process portion and the fourth process portion corresponding to a message received from the controlling portion.

20 10. An information processing apparatus, disposed between a controlling portion and hardware, for controlling the hardware corresponding to a message received from the controlling portion, comprising:

25 first means for communicating with the controlling portion;

second means for being communicable with first hardware and second hardware;

third means for communicating with said first means and said second means and executing an interfacing process corresponding to the first hardware; and

fourth means for communicating with said

first means and said second means and executing an interfacing process corresponding to the second hardware,

5 wherein said first means outputs a message to one of said third means and said fourth means corresponding to a message received from the controlling portion.

11. The information processing apparatus as set forth in claim 10, further comprising:

10 fifth means for communicating with the controlling portion,

wherein said fifth means acquires data that is processed by the hardware corresponding to a message received from the controlling portion.

15 12. The information processing apparatus as set forth in claim 11,

wherein said fifth means receives a message that designates the stored location of data from the controlling portion and acquires data that is processed by the hardware corresponding to the stored location of the data,

20 wherein said first means receives a message that designates an encoding process type from the controlling portion,

25 wherein one of said third means and said fourth means receives the message from said first means corresponding to the encoding process type, and

wherein the first or second hardware that communicates with said second means encodes the acquired data corresponding to a communication result of one of said third means and said fourth means to said second means.

13. An information processing method for controlling hardware corresponding to a message received from a controlling portion, comprising the steps of:

acquiring data that is processed by the hardware corresponding to a message that designates the stored location of data received from the controlling portion;

executing an interfacing process for a first encoder or a second encoder corresponding to a message that designates an encoding process type, the message being received from the controlling portion;

sending a message that has been interface-processed to the first encoder or the second encoder;

and

causing the first encoder or the second encoder to encode the acquired data corresponding to the message that has been interface-processed.

14. A storage medium for storing a computer controllable program, disposed between a controlling portion and hardware, for controlling the hardware corresponding to a message received from the

controlling portion, the program containing capsulated process portions,

wherein if an abnormality takes place in each process portion, it is initialized in one of a first path for initializing a first buffer for exchanging data with the hardware, a second path for unallocating a second buffer for exchanging data with the controlling portion, allocating the second buffer, initializing the second buffer, and initializing the first buffer, and a third path for unallocating the second buffer and unallocating the first buffer.

15. The storage medium as set forth in claim 14, wherein when each process portion is initialized in the first path, if the process portion is not restored from the abnormality, the process portion is initialized in the second path.

16. The storage medium as set forth in claim 15, wherein when each process portion is initialized in the second path, if the process portion is not restored from the abnormality, the process portion is initialized in the third path.

17. The storage medium as set forth in claim 14, wherein when the message type of the message received from the controlling portion is an interrupt and the message number is QUIT, each process portion is initialized in the first path.

18. The storage medium as set forth in claim 14,



wherein when the message type of the message received from the controlling portion is an interrupt and the message number is RESET, each process portion is initialized in the second path.

5 19. The storage medium as set forth in claim 14,  
Sub A2 wherein each process portion has reply state, manage state, send state, receive state, and ready state.

10 20. A storage medium for storing a computer controllable program, disposed between a controlling portion and hardware, for controlling the hardware corresponding to a message received from the controlling portion, the program containing capsulated process portions,

15 wherein when an abnormality takes place in each process portion, it is initialized in one of a first path that contains a first initializing state to which the process portion advances when it is generated, a second path that contains a first completion state to which the process portion advances when it is completed, 20 a second initializing state to which the process portion advances when it is generated, and the first initializing state, and a third path that contains the first completion state and a second completion state to which the process portion advances when it is completed. 25

21. An information processing apparatus, disposed between a controlling portion and hardware, for

performing a process corresponding to a program that contains capsulated process portions for controlling the hardware corresponding to a message received from the controlling portion, comprising:

5 first initializing means that contains a first initializing state to which each process portion advances when it is generated;

10 second initializing means that contains a first completion state to which the process portion advances when it is completed, a second initializing state to which the process portion advances when it is generated, and the first initializing state; and

15 third initializing means that contains the first completion state and a second completion state to which the process portion advances when it is completed,

wherein said first initializing means, said second initializing means, and said third initializing means are executed if an abnormality takes place in the process portion.

20 22. An information processing method, disposed between a controlling portion and hardware, for performing a process corresponding to a program that contains capsulated process portions for controlling the hardware corresponding to a message received from  
25 the controlling portion, comprising the steps of:

a first initializing step that contains a first initializing state to which each process portion

advances when it is generated;

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a second initializing step that contains a first completion state to which the process portion advances when it is completed, a second initializing state to which the process portion advances when it is generated, and the first initializing state; and

a third initializing step that contains the first completion state and a second completion state to which the process portion advances when it is completed,

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wherein the first initializing step, the second initializing step, and the third initializing step are executed if an abnormality takes place in the process portion.